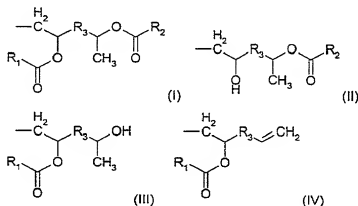




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(54) Title: ESTERQUATS, THEIR INTERMEDIATES, A PROCESS TO MAKE THE ESTERQUATS, AND THEIR USE



(57) Abstract

Esterquats, their intermediates, a process to make the esterquats, and their use as a fabric softener wherein said esterquats are of the formula: $\text{R}_4[\text{R}_5\text{R}_6\text{N}^+\text{Z}]_n \text{X}^-$, wherein Z is covalently bonded to the nitrogen atom and selected from the group of formulae (I)–(IV), and isomers thereof, wherein R_1 and R_2 are independently selected from linear or branched, saturated or unsaturated C_6 – 22 hydrocarbyl, R_3 is nothing or C_1 – 20 hydrocarbyl, R_4 is C_1 – 6 alkyl or independent Z, R_5 is H, C_1 – 6 alkyl, independent Z, or the residue of the quaternizing agent, such as C_1 – 30 alkyl or alkenyl, preferably, C_1 – 7 alkyl or alkenyl, R_6 is C_1 – 6 alkyl or independent Z, and X^- is an ion selected from Cl^- , Br^- , I^- , F^- , CH_3SO_4^- , $\text{C}_2\text{H}_5\text{SO}_4^-$, H_2PO_4^- , HPO_4^{2-} , PO_4^{3-} , H_2PO_3^- , HPO_3^{2-} , H_2PO_2^- , HPO_2^{2-} , nitrate⁻, formate⁻, acetate⁻, propionate⁻, tartrate⁻ and benzoate⁻, wherein the total charge of the anions equals the total charge of the cations and said process concerns the reaction of an unsaturated epoxide with an amine or a protonated amine, esterification of the formed intermediate, and optional quaternization.